REA response to Smart Secure Electricity Systems Programme: Energy Smart Appliances Consultation

The Association for Renewable Energy & Clean Technology (REA) is pleased to submit this response to the above consultation. The REA represents renewable electricity, heat and transport, as well as Electric Vehicle charging infrastructure, Energy Storage and Circular Economy companies. Members encompass a wide variety of organisations, including generators, project developers, fuel and power suppliers, investors, equipment producers and service providers. Members range in size from major multinationals to sole traders. There are around 550 corporate members of the REA, making it the largest renewable energy and clean technology trade association in the UK.

1. Do you have a view on the lead time industry will require to implement the first phase regulations as proposed in this document?

Given the uncertainty in the requirements at this stage, along with the added uncertainty of seeing a potential new Government come to power who may wish to review the proposals, we believe the first phase of implementation will likely need to be extended beyond the 18 months being proposed. This could, in turn, have impacts on phase two, however believe the proposed two years likely to be achievable depending on how stringency of the requirements and the availability of guidance.

We, however, also stress that speed of implementation will also be heavily dependent on the wider policy environment and nature of the market. Existing assets have, to date, been provided little incentive to explore greater flexibility services or smart systems, as the price signals and flexibility markets have been slow to develop and are not yet well standardised across the industry. While regulation will help to ensure greater adoption, failure to match these with clear price signals could result in a contraction of the sector and slow innovation due to the addition of costly regulation without a clear market reward.

2. Do you agree with our plan to proceed on the basis of phasing ESA device regulations as set out above whilst committing to keep this approach under review?

We agree with a phased approach and stress the importance of ensuring the approach is kept under regular review via industry consultation. Significantly, the approach should be responsive to how quickly the markets for flexibility are able to evolve. If the price signals are not yet there to reward the implementation of such standards, then the ESA requirements should be slowed, to avoid unnecessary cost being place on the sector, and ultimately the consumer, before the benefits can be realised.

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For example, Smart Tariffs are still evolving in the market, with some notable market leaders. These tariffs, however, are largely associated with EV charging, rather than wider ESA's such as heating technologies or storage technologies. Until price signals are available for these technologies it will be difficult to see these standards expediated.

Given this, the review process may need to consider separate timelines for different technology groups. Thermal storage technologies are likely to require different price signals to low carbon heat generation technologies and may need a different lead time to see ESA standards introduced. Individual technology timelines will need to be considered as part of the review process.

3. Do you have a view on when the smart mandate for heating appliances should be implemented? Please provide evidence to support your answer.

Introduction of the smart mandate should align with wider market developments. This includes:

- Implementation of The Review of Electricity Market Review, and any finalised proposals for the development of flexibility markets.
- Continuing implementation of the Smart Systems and Flexibility Plan
- Roll out dates and critical mass for the availability of SMETS 2 smart meters in people's homes.
- Implementation of more generous government support mechanisms to support the deployment of low carbon heating systems, thermal storage and battery storage. Such a support mechanism will need to consider the additional costs that ESA regulations may add to the installation of such systems.
- Wider evolution of flexibility market products and price signal in the market to support the benefits of ESA, for low carbon heating systems and storage.

Failure to align these market developments with a smart mandate on heating appliances could see additional requirements placed on systems before the market is ready for them, ultimately slowing deployment and adding cost. It is important that such requirements are introduced aligned with a whole system approach.

4. Would you support the introduction of a metering accuracy requirement to the effect that all ESAs should have a means to measure their import/export consumption to up to or better than 2% nominal accuracy?
Member feedback welcome

8. Do you have a view on whether standalone domestic battery energy storage systems (BESS) should be included in future legislation in order to be subject to the smart mandate requirements associated with the first phase regulations? Please provide evidence to support your answer.

In general, given existing regulation already in place for BESS systems, the REA does not think it would be appropriate to include such systems in the first phase of regulations where proposed requirements are already largely met.

It is noted that BESS devices already must comply with ETSI EN 303 645 which includ following requirements of G98, G99 and G100 in order to protect the network, which is enforced and monitored via the ENA and the Type Test Register. Additional regulations are also applied via MCS and PAS 63100. These requirements already place significant costs on manufacturers, while also already ensuring a level of smart service.

Given the costs associated with such existing regulation, it could be damaging to add further costs in the form of ESA regulations at this time, especially before Time of Use tariffs and smart meters become more established across the whole UK market. This is something that can be kept under review, and potentially brought in via later stages once flexibility markets are more established.

9. Do you have any data on what proportion of installed domestic battery energy storage systems (BESS) have smart functionality? Smart functionality is defined as being communications-enabled and able to respond to price and/or other signals by shifting and/or modulating their electricity consumption.

With the market constantly evolving, we are aware that BESS system developers are also continually looking at additional services and benefits to be provided to the consumer. To respond to these market dynamics, most do already have a level of smart functionality and responsiveness to price signals, enabling consumers to take advantage of the limited price signals currently in the market. As such, we believe there is a strong indication that that a significant proportion of BESS have smart functionality and/or meet the necessary standards for it to be added.

Once smart meters and ToU tariffs have deep market presence, it may become beneficial to be able to control clusters of batteries. It may then be appropriate to consider further evolution of ESA requirements, although we note given the current evolution of the sector there is sufficient evidence that market-driven solutions may lead the way, rather than being driven by legislative requirements.

10.Do you have evidence on the extent to which domestic battery energy storage systems (BESS) with smart functionality already meet the minimum requirements set out in Table 1? Please provide evidence to support your answer.

All the requirements listed in table 1 are largely already covered by ETSI EN 303 645, which BESS systems need to register to confirm compliance against.

We do however note, as compared with table 1, there is currently no specific requirement for BESS relating to random delay. However, energy storage devices must comply with numerous tests in G98 and G99 to be permitted to be connected to the grid – this includes required response behaviours when there is network instability in the

form of high or low voltage, high and low frequency, rate of change of frequency, fault currents, formulaic reduction in power in relation to grid frequency changes ("droop") and many other requirements. As such the grid stability compliance offered by energy storage, and already required, mean devices are already more sophisticated then the simple random delay requirement suggested in table 1.

11.Do you agree with government's proposal that electric heating appliances must be able to modulate output and/or change the time at which electricity is consumed in response to signals, including price and other signals that facilitate DSR?

While we are supportive of this requirement in the medium to long term, we stress that it must be met with clear price signals in the market that ensures those with ESA heating appliances are rewarded for this response. If the rewards are limited, as they are today, then this requirement will lead to poor consumer experiences and only serve to add cost to the deployment of such systems. The current difficulty in monetising the flexibility these assets provide needs to be addressed as part of the timing for such a mandate.

26.Do you agree with government's proposal to require the appliance manufacturer to provide appliances with integrated or 'add-on' ESA functionality?

PAS1878 does not require a specific protocol between the ESA and the CEM but there are some requirements about this protocol. If the Government intends to mandate and rules on one class of ESA manufacturer it should make sure that it does not unfairly advantage one type of ESA over another as some ESAs already have far more regulation than others. An even-handed approach should be taken that treats each type of ESA fairly, while recognising that differences exist requiring some specific regulations for different types of device.

Questions 30-33:

The REA understands that proposed changes to EV chargepoints would not take effect until stage 2. However, we would warn that long-established manufacturers of widely deployed technologies are likely to have more resources to fund such measures such as these.

The cost of new regulations should not be borne by nascent industries such as heat batteries, domestic-scale batteries, heat pumps and EV charging. Costs held absorbed by the manufacturer will inevitably result in less funding for development and marketing, which are crucial for these nascent industries. Any costs passed on to the consumer will deter buyers and inhibit the uptake of these technologies at a period when they need to be rolled out widely.

This comes after the Government's own statistics reveal the cost of the smart charging regulations for chargepoint manufacturers was up to £500,000. Post Brexit the UK has pursued several contrasting regulations to other markets for both domestic and public charging infrastructure. This is making it harder to source equipment capable of complying with these regulations. The Government must look to support the domestic chargepoint manufacturing market, so that businesses are less reliant on imports whose production cycle times can be drawn out when needing to comply with new requirements in divergent markets. Failure to do so, can result in exemptions and delayed implementation which create an unequal charging experience and cause a delay in EV uptake if the products to charge them do not meet consumer expectations.

The REA also recognises the advancements in communications between cars and other systems. We suggest that since the publication of the original Smart Charge Point Regulations that regulations could be applied to the vehicle rather than the chargepoint. The chargepoint is merely an intermediary between the vehicle and the energy supplier and we see significant savings to the chargepoint manufacturers from instead examining how future regulation is applied to the vehicle.

With advancements in plug and charge across a number of OEM's enhanced communication is possible and we would strongly recommend the Government considers how demand side response can be triggered through the vehicle.

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34.Do you foresee any issues with adoption of ETSI EN 303 645 for Phase 1 requirements for all ESAs? If so, how could these issues be mitigated?

We note that energy storage devices and solar inverters are already required to comply with this standard and submit a statement to this effect to the ENA type test register.

35.To what extent would requiring cyber security testing of ESAs prior to them being sold or distributed in GB impact ESA supply chains? What other approaches could be used to provide sufficient assurance that cyber security requirements were being met?

We raise concern that this could delay the introduction of ESAs or potentially result in them being withdrawn. An alternative approach could be the existing registration of

devices with the ENA type test register. As such, we encourage government to build oon the regulatory framework that is already in place.

36.Do you have any suggested alternative solutions to the random offset function which would mitigate the risk of large-scale synchronised changes in load?

We would encourage government to also consider monitoring grid frequency and not plough on with a state of change if it is outside certain limits - these could be similar to the emergency limits used by generators. This rule should not be used to provide "free" demand side response to the network operators.

Questions 44-47:

Any proposed standard will need to ensure that it is not overly burdensome and complex for industry to implement. Government must take learnings from the Smart Charging Regulations for electric vehicles to ensure this. Within the original Smart Charging Regulations there was an obligation to ensure that a test was undertaken, and paperwork provided to show that it had been undertaken. However, at the time of publication there was no guidance as to whether this test had to be repeated at the point of resale. For example, an installer having to retest it after both the hardware manufacturer and energy company had already checked it.

The standard must therefore be very clear from the start where the obligation for compliance lies and that proof of this is easily transferable from different service providers.

Having a standard across a number of different areas e.g. cyber security, data protection and grid stability may also require a tailored and phased approach. It is well known there is a shortage of cyber security experts in the sector and therefore ensuring compliance may take longer as recruitment and implementation could be delayed.

Demand Side Response Service Providers (DSRSPs) we expect already to be purchasing where it is possible Energy Smart Appliances that are compliant with existing regulation. However, we do understand and support the need for derogations where the existing market does not necessarily support UK regulations to date.

For example, the majority of chargepoints are manufactured within Europe. The UK is a comparatively small market, and post Brexit as the UK positions itself as a leader in the EV rollout, a number of our regulations, standards and specifications differ from European markets. For example, the height requirements with in PAS 1899 are different to those in many European markets. This can make it more difficult for our members to purchase compliant equipment which, if produced, will likely be in smaller quantities, with all UK competitors bidding for the same limited number of products.

The UK in its mission to become a world leader must therefore support and encourage UK manufacturing to avoid this going forward. This would ensure that any future products are easily interoperable with existing UK regulations, built in and built for the UK market. The UK should also look to work with Europe to ensure a greater level of interoperability and a similar consumer experience for EV drivers who drive across Europe and the UK.

49.Given the additional detail provided in this chapter, do you believe that the proposed 24-month period between when the first and second phase regulations come into force is appropriate?

More intensive regulation should be delayed to 60 - 120 months - or perhaps longer – until there is really a valuable reward for flexibility for ESAs.

The introduction of these standards need to be met with an evolved market that properly rewards ESA's. For example, there are still a relatively small number of smart tariffs and most of them are targeted at just one asset class (EV Charging).

50.Are there any documents (such as specific standards, protocols, guidance, code, specifications) that should be explored for inclusion into the SSES technical framework? Please can you provide within your answer why their inclusion would help meet the SSES policy objectives and why the SSES technical framework is the best delivery mechanism.

ETSI 303 645 is widely used in respect of solar PV, energy storage, etc.

54.Do you agree with the overall model of technical governance? Can you suggest any existing governance that would be well suited to take on this function?

We are supportive of the proposed technical governance approach. It is important to make sure that affected parties can participate on an equal basis with the authorities.

55.Does this list capture all the necessary functions to deliver security governance? Are other functions needed?

We believe the list captures most of the necessary functions.

We note that it could be useful to have a type test register wherein devices compliance certificates are registered and assessed. Energy storage systems, solar PV inverters and other devices are registered in this way. Costs could be kept low by adding any new requirements to the remit of the ENA Type Test Register which already exists. This is already the case for energy storage devices confirming compliance with ETSI 303 645.

56. Do you agree with the overall model of security governance? Can you suggest any existing governance that would be well suited to take on this function?

Yes, we support that, at least initially, Government are the chair of the Security Governance Group and play an enduring role as the policy and risk owner. This will also help to ensure that the Governance Group is aligned to departmental policy objectives. However, overtime it may be appropriate to consider whether the chair role should be taken on by an independent body such as Ofgem or NESO, who should also be permanent members of the group, so that there is long term stability and certainty.

Having the NESO as permanent members will also ensure alignment with the development of the Strategic Spatial Energy Plan (SSEP) that fully takes into account the complete capabilities of the existing grid and the enhancements to the grid needed, based around decentralised energy systems, especially with the emergence of ESAs. Also, as mentioned NESO would be able to provide a holistic view of the domestic-scale Demand Side Response and how its risks fit into the larger electricity system.

It is also crucial that the industry expert stakeholders in the group includes large trade bodies, like the REA, that represent the majority of the sector and will be able to coordinate opinions from their members.

57. Do you agree that electricity network licence holders are best placed to meet certain costs of setting up and maintaining technical and security frameworks during the Transition Phase? Please explain your answer.

Yes, we believe that electricity network licence holders would be best placed to meet certain costs of setting up and maintaining technical and security frameworks. It is recognised that they will benefit from ensuring the right technical and security frameworks are put in place so that the integrity of their networks is not compromised, while also having the ability to pass on costs to wider market participants. Also, many electricity network licence holders have in their plans to incorporate a much wider scope of flexibility to assist with grid stability and negate the need to build additional grid infrastructure.

Therefore, having good technical and security frameworks in place to assist with further adoption of domestic level smart ESA will also in the medium to long run drive savings through maximises the use of existing infrastructure and reduce the level of new grid infrastructure inevitably required.

Given the above, we also note that ESA assets to date have been under rewarded for the services benefits they provide to the grid and wider infrastructure. Adding any additional cost therefore must also be met with market reward that makes the installation of regulated ESA assets worthwhile.